



# SEQUENCE LISTING

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REINSTEIN, Joachim  
SCHLICHTING, Ilme

<120> Novel means and methods for the preparation and  
activation of nucleoside and nucleotide based drugs

<130> 009848-0272497

<140> 09/622,101

<141> 2000-01-29

<150> PCT/EP99/00945

<151> 1999-02-12

<160> EP 98 10 2546.3

<161> 1998-02-13

<170> 15

<180> PatentIn Ver. 2.1

<210> 1

<211> 240

<212> PRT

<213> African swine fever virus

<400> 1

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Ser Thr Gln Ala Met Arg Leu Lys Lys Ala Leu Glu Cys Met Asp Tyr  
20 25 30

Asn Ala Val Cys Ile Arg Phe Pro Asn Pro Asp Thr Thr Thr Gly Gly  
35 40 45

Leu Ile Leu Gln Val Leu Asn Lys Met Thr Glu Met Ser Ser Glu Gln  
50 55 60

Leu His Lys Leu Phe Thr Lys His His Ser Glu Phe Ser Ala Glu Ile  
65 70 75 80

Ala Ala Leu Leu Lys Leu Asn Phe Ile Val Ile Val Asp His Tyr Ile

85					90					95					
Trp	Ser	Gly	Leu	Ala	Tyr	Ala	Gln	Ala	Asp	Gly	Ile	Thr	Ile	Glu	Thr
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Lys	Asn	Ile	Phe	Lys	Pro	Asp	Tyr	Thr	Phe	Phe	Leu	Ser	Ser	Lys	Lys
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Pro	Leu	Asn	Glu	Lys	Pro	Leu	Thr	Leu	Gln	Arg	Leu	Phe	Glu	Thr	Lys
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Glu	Lys	Gln	Glu	Thr	Ile	Phe	Thr	Asn	Phe	Thr	Ile	Ile	Met	Asn	Asp
145					150					155					160
Val	Pro	Lys	Asn	Arg	Leu	Cys	Ile	Ile	Pro	Ala	Thr	Leu	Asn	Lys	Glu
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Ile	Ile	His	Thr	Met	Ile	Leu	Thr	Lys	Thr	Ile	Lys	Val	Phe	Asp	Asn
			180					185					190		
Asn	Ser	Cys	Leu	Asn	Tyr	Ile	Lys	Met	Tyr	Asp	Asp	Lys	Tyr	Leu	Asn
		195					200					205			
Val	Gln	Asp	Leu	Asn	Leu	Phe	Asp	Phe	Asp	Trp	Gln	Lys	Cys	Ile	Glu
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<211> 212

<212> PRT

<213> Bacillus subtilis

<400> 2

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Thr	Thr	Val	Leu	Gln	Glu	Ile	Lys	Asn	Ile	Leu	Thr	Ala	Glu	Gly	Leu
			20					25					30		

Gln	Val	Met	Ala	Thr	Arg	Glu	Pro	Gly	Gly	Ile	Asp	Ile	Ala	Glu	Gln
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Ile Arg Glu Val Ile Leu Asn Glu Asn Asn Ile Leu Met Asp Pro Lys  
 50 55 60  
 Thr Glu Ala Leu Leu Tyr Ala Ala Ala Arg Arg Gln His Leu Val Glu  
 65 70 75 80  
 Lys Val Lys Pro Ala Leu Glu Gln Gly Phe Ile Val Leu Cys Asp Arg  
 85 90 95  
 Phe Ile Asp Ser Pro Leu Ala Tyr Gln Gly Tyr Ala Arg Gly Leu Gly  
 100 105 110  
 Ile Asp Glu Val Leu Ser Ile Asn Glu Phe Ala Ile Gly Asp Met Met  
 115 120 125  
 Pro His Val Thr Val Tyr Phe Ser Ile Asp Pro Glu Glu Gly Leu Lys  
 130 135 140  
 Arg Ile Tyr Ala Asn Gly Ser Arg Glu Lys Asn Arg Leu Asp Leu Glu  
 145 150 155 160  
 Lys Leu Asp Phe His Thr Lys Val Gln Glu Gly Tyr Gln Glu Leu Met  
 165 170 175  
 Lys Arg Phe Pro Glu Arg Phe His Ser Val Asp Ala Gly Gln Ser Lys  
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 Asp Leu Val Val Gln Asp Val Leu Lys Val Ile Asp Glu Ala Leu Lys  
 195 200 205  
 Lys Ile Gln Leu  
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<210> 3  
 <211> 213  
 <212> PRT  
 <213> Escherichia coli

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 Thr Thr Ala Arg Asn Val Val Val Glu Thr Leu Glu Gln Leu Gly Ile  
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 Arg Asp Met Val Phe Thr Arg Glu Pro Gly Gly Thr Gln Leu Ala Glu  
 35 40 45

Lys Leu Arg Ser Leu Val Leu Asp Ile Lys Ser Val Gly Asp Glu Val  
           50                              55                              60  
 Ile Thr Asp Lys Ala Glu Val Leu Met Phe Tyr Ala Ala Arg Val Gln  
   65                              70                              75                              80  
 Leu Val Glu Thr Val Ile Lys Pro Ala Leu Ala Asn Gly Thr Trp Val  
                               85                              90                              95  
 Ile Gly Asp Arg His Asp Leu Ser Thr Gln Ala Tyr Gln Gly Gly Gly  
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 Arg Gly Ile Asp Gln His Met Leu Ala Thr Leu Arg Asp Ala Val Leu  
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 Gly Asp Phe Arg Pro Asp Leu Thr Leu Tyr Leu Asp Val Thr Pro Glu  
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 Val Gly Leu Lys Arg Ala Arg Ala Arg Gly Glu Leu Asp Arg Ile Glu  
  145                              150                              155                              160  
 Gln Glu Ser Phe Asp Phe Phe Asn Arg Thr Arg Ala Arg Tyr Leu Glu  
                               165                              170                              175  
 Leu Ala Ala Gln Asp Lys Ser Ile His Thr Ile Asp Ala Thr Gln Pro  
                               180                              185                              190  
 Leu Glu Ala Val Met Asp Ala Ile Arg Thr Thr Val Thr His Trp Val  
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 Lys Glu Leu Asp Ala  
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 <212> PRT  
 <213> Haemophilus influenzae

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 Ser Ser Ala His Gln Ser Val Val Arg Val Leu His Glu Leu Gly Ile  
                               20                              25                              30  
 Gln Asp Val Val Phe Thr Arg Glu Pro Gly Gly Thr Pro Leu Ala Glu

		35					40						45						
Lys	Leu	Arg	His	Leu	Ile	Lys	His	Glu	Thr	Glu	Glu	Pro	Val	Thr	Asp				
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Lys	Ala	Glu	Leu	Leu	Met	Leu	Tyr	Ala	Ala	Arg	Ile	Gln	Leu	Val	Glu				
65					70					75					80				
Asn	Val	Ile	Lys	Pro	Ala	Leu	Met	Gln	Gly	Lys	Trp	Val	Val	Gly	Asp				
				85					90					95					
Arg	His	Asp	Met	Ser	Ser	Gln	Ala	Tyr	Gln	Gly	Gly	Gly	Arg	Gln	Leu				
			100					105					110						
Asp	Pro	His	Phe	Met	Leu	Thr	Leu	Lys	Glu	Thr	Val	Leu	Gly	Asn	Phe				
		115					120					125							
Glu	Pro	Asp	Leu	Thr	Ile	Tyr	Leu	Asp	Ile	Asp	Pro	Ser	Val	Gly	Leu				
	130					135					140								
Ala	Arg	Ala	Arg	Gly	Arg	Gly	Glu	Leu	Asp	Arg	Ile	Glu	Gln	Met	Asp				
145					150					155					160				
Leu	Asp	Phe	Phe	His	Arg	Thr	Arg	Ala	Arg	Tyr	Leu	Glu	Leu	Val	Lys				
				165					170					175					
Asp	Asn	Pro	Lys	Ala	Val	Val	Ile	Asn	Ala	Glu	Gln	Ser	Ile	Glu	Leu				
			180					185					190						
Val	Gln	Ala	Asp	Ile	Glu	Ser	Ala	Val	Lys	Asn	Trp	Trp	Lys	Ser	Asn				
		195					200					205							
Glu	Lys																		
	210																		

<210> 5  
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 <212> PRT  
 <213> Homo sapiens

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 1 5 10 15  
 Ala Gly Lys Ser Thr Gln Ser Arg Lys Leu Val Glu Ala Leu Cys Ala  
 20 25 30

Ala Gly His Arg Ala Glu Leu Leu Arg Phe Pro Glu Arg Ser Thr Glu  
                   35                                  40                                  45  
 Ile Gly Lys Leu Leu Ser Ser Tyr Leu Gln Lys Lys Ser Asp Val Glu  
           50                                  55                                  60  
 Asp His Ser Val His Leu Leu Phe Ser Ala Asn Arg Trp Glu Gln Val  
   65                                  70                                  75                                  80  
 Pro Leu Ile Lys Glu Lys Leu Ser Gln Gly Val Thr Leu Val Val Asp  
                                   85                                  90                                  95  
 Arg Tyr Ala Phe Ser Gly Val Ala Phe Thr Gly Ala Lys Glu Asn Phe  
                   100                                  105                                  110  
 Ser Leu Asp Trp Cys Lys Gln Pro Asp Val Gly Leu Pro Lys Pro Asp  
           115                                  120                                  125  
 Leu Val Leu Phe Leu Gln Leu Gln Leu Ala Asp Ala Ala Lys Arg Gly  
   130                                  135                                  140  
 Ala Phe Gly His Glu Arg Tyr Glu Asn Gly Ala Phe Gln Glu Arg Ala  
  145                                  150                                  155                                  160  
 Leu Arg Cys Phe His Gln Leu Met Lys Asp Thr Thr Leu Asn Trp Lys  
                   165                                  170                                  175  
 Met Val Asp Ala Ser Lys Arg Leu Glu Ala Val His Glu Glu Leu Arg  
           180                                  185                                  190  
 Val Leu Ser Glu Asp Ala Ile Arg Thr Ala Thr Glu Lys Pro Leu Gly  
           195                                  200                                  205  
 Glu Leu Trp Lys  
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 <212> PRT  
 <213> Methanococcus jannaschii

<400> 6  
 Met Val Asp Asn Met Phe Ile Val Phe Glu Gly Ile Asp Gly Ser Gly  
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 Lys Thr Thr Gln Ser Lys Leu Leu Ala Lys Lys Met Asp Ala Phe Trp  
           20                                  25                                  30

Thr Tyr Glu Pro Ser Asn Ser Leu Val Gly Lys Ile Ile Arg Glu Ile  
           35                                  40                                  45  
 Leu Ser Gly Lys Thr Glu Val Asp Asn Lys Thr Leu Ala Leu Leu Phe  
           50                                  55                                  60  
 Ala Ala Asp Arg Ile Glu His Thr Lys Leu Ile Lys Glu Glu Leu Lys  
           65                                  70                                  75                                  80  
 Lys Arg Asp Val Val Cys Asp Arg Tyr Leu Tyr Ser Ser Ile Ala Tyr  
                                   85                                  90                                  95  
 Gln Ser Val Ala Gly Val Asp Glu Asn Phe Ile Lys Ser Ile Asn Arg  
                                   100                                  105                                  110  
 Tyr Ala Leu Lys Pro Asp Ile Val Phe Leu Leu Ile Val Asp Ile Glu  
                                   115                                  120                                  125  
 Thr Ala Leu Lys Arg Val Lys Thr Lys Asp Ile Phe Glu Lys Lys Asp  
           130                                  135                                  140  
 Phe Leu Lys Lys Val Gln Asp Lys Tyr Leu Glu Leu Ala Glu Glu Tyr  
           145                                  150                                  155                                  160  
 Asn Phe Ile Val Ile Asp Thr Thr Lys Lys Ser Val Glu Glu Val His  
                                   165                                  170                                  175  
 Asn Glu Ile Ile Gly Tyr Leu Lys Asn Ile Pro His  
                                   180                                  185

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 <212> PRT  
 <213> Mus musculus

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 Met Ala Ser Arg Arg Gly Ala Leu Ile Val Leu Glu Gly Val Asp Arg  
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 Ala Gly Lys Thr Thr Gln Gly Leu Lys Leu Val Thr Ala Leu Cys Ala  
           20                                  25                                  30  
 Ser Gly His Arg Ala Glu Leu Leu Arg Phe Pro Glu Arg Ser Thr Glu  
           35                                  40                                  45  
 Ile Gly Lys Leu Leu Asn Ser Tyr Leu Glu Lys Lys Thr Glu Leu Glu

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Asp His Ser Val His Leu Leu Phe Ser Ala Asn Arg Trp Glu Gln Val				
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Pro Leu Ile Lys Ala Lys Leu Asn Gln Gly Val Thr Leu Val Leu Asp				
	85		90	95
Arg Tyr Ala Phe Ser Gly Val Ala Phe Thr Gly Ala Lys Glu Asn Phe				
	100		105	110
Ser Leu Asp Trp Cys Lys Gln Pro Asp Val Gly Leu Pro Lys Pro Asp				
	115		120	125
Leu Ile Leu Phe Leu Gln Leu Gln Leu Leu Asp Ala Ala Ala Arg Gly				
	130		135	140
Glu Phe Gly Leu Glu Arg Tyr Glu Thr Gly Thr Phe Gln Lys Gln Val				
145		150		155
Leu Leu Cys Phe Gln Gln Leu Met Glu Glu Lys Asn Leu Asn Trp Lys				
	165		170	175
Val Val Asp Ala Ser Lys Arg Thr Pro Ser Glu Thr Leu His Arg Gly				
	180		185	190
His Trp Gly Ser Tyr Gly Asn Lys Ser Ala Ser Ile Ala Asn Thr Ile				
	195		200	205
Phe Trp Phe Cys Lys Arg Leu Val Glu Gly Ser His Leu Tyr Thr Ile				
	210		215	220
Ser Arg Ser				
225				

<210> 8  
 <211> 210  
 <212> PRT  
 <213> Mycoplasma pneumoniae

<400> 8  
 Met Lys Gln Gly Val Phe Val Ala Ile Glu Gly Val Asp Gly Ala Gly  
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 Lys Thr Val Leu Leu Glu Ala Phe Lys Gln Arg Phe Pro Gln Ser Phe  
 20 25 30



Leu Gly Phe Lys Thr Leu Phe Ser Arg Glu Pro Gly Gly Thr Pro Leu  
           35                          40                          45  
 Ala Glu Lys Ile Arg Ala Leu Leu Leu His Glu Ala Met Glu Pro Leu  
       50                          55                          60  
 Thr Glu Ala Tyr Leu Phe Ala Ala Ser Arg Thr Glu His Val Arg Gln  
   65                          70                          75                          80  
 Leu Ile Gln Pro Ala Leu Gln Gln Lys Gln Leu Val Ile Val Asp Arg  
                           85                          90                          95  
 Phe Val Trp Ser Ser Tyr Ala Tyr Gln Gly Leu Ile Lys Lys Val Gly  
                   100                          105                          110  
 Leu Asp Val Val Lys Lys Leu Asn Ala Asp Ala Val Gly Asp Ser Met  
           115                          120                          125  
 Pro Asp Phe Thr Phe Ile Val Asp Cys Asp Phe Glu Thr Ala Leu Asn  
       130                          135                          140  
 Arg Met Ala Lys Arg Gly Gln Asp Asn Leu Leu Asp Asn Thr Val Lys  
   145                          150                          155                          160  
 Lys Gln Ala Asp Phe Asn Thr Met Arg Gln Tyr Tyr His Ser Leu Val  
                           165                          170                          175  
 Asp Asn Lys Arg Val Phe Leu Leu Asp Gly Gln Asn Gln Thr Gly Cys  
           180                          185                          190  
 Leu Glu Gln Phe Ile Glu Gln Leu Ser Gln Cys Leu Thr Gln Pro Thr  
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 Leu Ser  
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<210> 9  
 <211> 210  
 <212> PRT  
 <213> Mycoplasma genitalium

<400> 9  
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 Lys Thr Ala Leu Ile Glu Gly Phe Lys Lys Leu Tyr Pro Thr Lys Phe  
           20                          25                          30

Leu Asn Tyr Gln Leu Thr Tyr Thr Arg Glu Pro Gly Gly Thr Leu Leu  
           35                                  40                                  45  
 Ala Glu Lys Ile Arg Gln Leu Leu Leu Asn Glu Thr Met Glu Pro Leu  
       50                                  55                                  60  
 Thr Glu Ala Tyr Leu Phe Ala Ala Ala Arg Thr Glu His Ile Ser Lys  
   65                                  70                                  75                                  80  
 Leu Ile Lys Pro Ala Ile Glu Lys Glu Gln Leu Val Ile Ser Asp Arg  
                                   85                                  90                                  95  
 Phe Val Phe Ser Ser Phe Ala Tyr Gln Gly Leu Ser Lys Lys Ile Gly  
                                   100                                  105                                  110  
 Ile Asp Thr Val Lys Gln Ile Asn His His Ala Leu Arg Asn Met Met  
           115                                  120                                  125  
 Pro Asn Phe Thr Phe Ile Leu Asp Cys Asn Phe Lys Glu Ala Leu Gln  
       130                                  135                                  140  
 Arg Met Gln Lys Arg Gly Asn Asp Asn Leu Leu Asp Glu Phe Ile Lys  
   145                                  150                                  155                                  160  
 Gly Lys Asn Asp Phe Asp Thr Val Arg Ser Tyr Tyr Leu Ser Leu Val  
                                   165                                  170                                  175  
 Asp Lys Lys Asn Cys Phe Leu Ile Asn Gly Asp Asn Lys Gln Glu His  
           180                                  185                                  190  
 Leu Glu Lys Phe Ile Glu Leu Leu Thr Arg Cys Leu Gln Gln Pro Thr  
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 His Tyr  
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 <212> PRT  
 <213> Schizosaccharomyces pombe

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 Arg Ser Gly Lys Ser Thr Gln Cys Gln Leu Leu Val Asp Lys Leu Ile  
           20                                  25                                  30

Leu Asn Met Lys Arg Leu Lys Leu Phe Lys Phe Pro Asp Arg Thr Thr  
           35                                  40                                  45  
 Ala Ile Gly Lys Lys Ile Asp Asp Tyr Leu Thr Glu Ser Val Gln Leu  
       50                                  55                                  60  
 Asn Asp Gln Val Ile His Leu Leu Phe Ser Ala Asn Arg Trp Glu Pro  
   65                                  70                                  75                                  80  
 Ser Ile Tyr Tyr Arg Ala Asn Gln Gln Arg Cys Asn Cys Ile Leu Asp  
                                   85                                  90                                  95  
 Arg Tyr Ala Phe Ser Gly Ile Ala Phe Ser Ala Ala Lys Gly Leu Asp  
                   100                                  105                                  110  
 Trp Glu Trp Cys Lys Ser Pro Asp Arg Gly Leu Thr Arg Pro Asp Leu  
           115                                  120                                  125  
 Val Ile Phe Leu Asn Val Asp Pro Arg Ile Ala Ala Thr Arg Gly Gln  
       130                                  135                                  140  
 Tyr Gly Glu Glu Arg Tyr Glu Lys Ile Glu Met Gln Glu Lys Val Leu  
   145                                  150                                  155                                  160  
 Lys Asn Leu Gln Arg Leu Gln Lys Glu Phe Arg Glu Glu Gly Leu Glu  
                                   165                                  170                                  175  
 Phe Ile Thr Leu Asp Ala Ser Ser Tyr Ala Leu Glu Asp Val Asp Ser  
                   180                                  185                                  190  
 Gln Ile Val Asp Leu Val Ser Asn Val Asn Ile His Glu Thr Leu Asp  
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 Val Leu  
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<210> 11  
 <211> 204  
 <212> PRT  
 <213> Vaccinia virus

<400> 11  
 Met Ser Arg Gly Ala Leu Ile Val Phe Glu Gly Leu Asp Lys Ser Gly  
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 Lys Thr Thr Gln Cys Met Asn Ile Met Glu Ser Ile Pro Ala Asn Thr

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Ile	Lys	Tyr	Leu	Asn	Phe	Pro	Gln	Arg	Ser	Thr	Val	Thr	Gly	Lys	Met															
		35					40					45																		
Ile	Asp	Asp	Tyr	Leu	Thr	Arg	Lys	Lys	Thr	Tyr	Asn	Asp	His	Ile	Val															
	50					55					60																			
Asn	Leu	Leu	Phe	Cys	Ala	Asn	Arg	Trp	Glu	Phe	Ala	Ser	Phe	Ile	Gln															
65					70					75					80															
Glu	Gln	Leu	Glu	Gln	Gly	Ile	Thr	Leu	Ile	Val	Asp	Arg	Tyr	Ala	Phe															
				85					90					95																
Ser	Gly	Val	Ala	Tyr	Ala	Ala	Ala	Lys	Gly	Ala	Ser	Met	Thr	Leu	Ser															
			100					105					110																	
Lys	Ser	Tyr	Glu	Ser	Gly	Leu	Pro	Lys	Pro	Asp	Leu	Val	Ile	Phe	Leu															
		115					120					125																		
Glu	Ser	Gly	Ser	Lys	Glu	Ile	Asn	Arg	Asn	Val	Gly	Glu	Glu	Ile	Tyr															
	130					135					140																			
Glu	Asp	Val	Thr	Phe	Gln	Gln	Lys	Val	Leu	Gln	Glu	Tyr	Lys	Lys	Met															
145					150					155					160															
Ile	Glu	Glu	Gly	Asp	Ile	His	Trp	Gln	Ile	Ile	Ser	Ser	Glu	Phe	Glu															
				165					170					175																
Glu	Asp	Val	Lys	Lys	Glu	Leu	Ile	Lys	Asn	Ile	Val	Ile	Glu	Ala	Ile															
		180						185					190																	
His	Thr	Val	Thr	Gly	Pro	Val	Gly	Gln	Leu	Trp	Met																			
		195					200																							

<210> 12  
 <211> 205  
 <212> PRT  
 <213> Variola virus

<400> 12  
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 Lys Thr Thr Gln Cys Met Asn Ile Met Glu Ser Ile Pro Thr Asn Thr  
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Ile	Lys	Tyr	Leu	Asn	Phe	Pro	Gln	Arg	Ser	Thr	Val	Thr	Gly	Lys	Met
		35					40					45			
Ile	Asp	Asp	Tyr	Leu	Thr	Arg	Lys	Lys	Thr	Tyr	Asn	Asp	His	Ile	Val
	50					55					60				
Asn	Leu	Leu	Phe	Cys	Ala	Asn	Arg	Trp	Glu	Phe	Ala	Ser	Phe	Ile	Gln
65					70					75					80
Glu	Gln	Leu	Glu	Gln	Gly	Ile	Thr	Leu	Ile	Val	Asp	Arg	Tyr	Ala	Phe
				85					90					95	
Ser	Gly	Val	Ala	Tyr	Ala	Thr	Ala	Lys	Gly	Ala	Ser	Met	Thr	Leu	Ser
			100					105					110		
Lys	Ser	Tyr	Glu	Ser	Gly	Leu	Pro	Lys	Pro	Asp	Leu	Val	Ile	Phe	Leu
		115					120					125			
Glu	Ser	Gly	Ser	Lys	Glu	Ile	Asn	Arg	Asn	Val	Gly	Glu	Glu	Ile	Tyr
	130					135					140				
Glu	Asp	Val	Ala	Phe	Gln	Gln	Lys	Val	Leu	Gln	Glu	Tyr	Lys	Lys	Met
145					150					155					160
Ile	Glu	Glu	Gly	Glu	Asp	Ile	His	Trp	Gln	Ile	Ile	Ser	Ser	Glu	Phe
				165					170					175	
Glu	Glu	Asp	Val	Lys	Lys	Glu	Leu	Ile	Lys	Asn	Ile	Val	Ile	Glu	Ala
			180					185					190		
Ile	His	Thr	Val	Thr	Gly	Pro	Val	Gly	Gln	Leu	Trp	Met			
		195					200					205			

<210> 13

<211> 216

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 13

Met	Met	Gly	Arg	Gly	Lys	Leu	Ile	Leu	Ile	Glu	Gly	Leu	Asp	Arg	Thr
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Gly	Lys	Thr	Thr	Gln	Cys	Asn	Ile	Leu	Tyr	Lys	Lys	Leu	Gln	Pro	Asn
			20					25					30		

Cys	Lys	Leu	Leu	Lys	Phe	Pro	Glu	Arg	Ser	Thr	Arg	Ile	Gly	Gly	Leu
		35					40					45			

Ile Asn Glu Tyr Leu Thr Asp Asp Ser Phe Gln Leu Ser Asp Gln Ala  
     50                    55                    60  
 Ile His Leu Leu Phe Ser Ala Asn Arg Trp Glu Ile Val Asp Lys Ile  
     65                    70                    75                    80  
 Lys Lys Asp Leu Leu Glu Gly Lys Asn Ile Val Met Asp Arg Tyr Val  
                     85                    90                    95  
 Tyr Ser Gly Val Ala Tyr Ser Ala Ala Lys Gly Thr Asn Gly Met Asp  
                     100                    105                    110  
 Leu Asp Trp Cys Leu Gln Pro Asp Val Gly Leu Leu Lys Pro Asp Leu  
                     115                    120                    125  
 Thr Leu Phe Leu Ser Thr Gln Asp Val Asp Asn Asn Ala Glu Lys Ser  
                     130                    135                    140  
 Gly Phe Gly Asp Glu Arg Tyr Glu Thr Val Lys Phe Gln Glu Lys Val  
     145                    150                    155                    160  
 Lys Gln Thr Phe Met Lys Leu Leu Asp Lys Glu Ile Arg Lys Gly Asp  
                     165                    170                    175  
 Glu Ser Ile Thr Ile Val Asp Val Thr Asn Lys Gly Ile Gln Glu Val  
                     180                    185                    190  
 Glu Ala Leu Ile Trp Gln Ile Val Glu Pro Val Leu Ser Thr His Ile  
                     195                    200                    205  
 Asp His Asp Lys Phe Ser Phe Phe  
     210                    215

<210> 14

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic, no  
       natural origin, hypothetical

<400> 14

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31

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<213> Artificial Sequence

B' <220>  
<223> Description of Artificial Sequence: synthetic, no  
natural origin, hypothetical

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34